New data on EC safety

Safety

Summary from 2016

- There is no known passive exposure risk
- Little risk of nicotine poisoning for users (but e-liquid should be in child-proof containers)
- Effects of long-term use, especially on users with asthma/lung diseases are not known. Main ingredients unlikely to pose risks, but some flavourings/contaminants or materials used in EC manufacture may do so

Summary from 2016

- Monitoring is needed to detect and remove any emerging risk
- The estimate that EC are at least 95% safer than cigarettes takes this future uncertainty into account
- Smokers need not wait for further proofs to switch to vaping

Toxin exposure in vapers and NRT users

- Nicotine intake comparable to smoking
- Toxin intake substantially reduced or eliminated to the same degree with NRT and EC
- No increased aldehydes levels in vapers
- Dual users same toxin intake as smokers (heavier smokers at baseline, or did not reduce smoking), but no increase either

Shahab et al. Annals of Internal Medicine 2017

Exposure to cadmium and lead in smokers and vapers

- There are metals in e-liquid, but transfer to aerosol is minimal
- Smokers had much higher levels than vapers
- Vapers had levels similar to non-smokers

Prokopowitz et al. NTR 2018

Experimental confirmation

- Smokers switched to NRT (gum) or EC for 5 days (N=153)
- EC provided better nicotine delivery
- Identical reduction in 23 biomarkers, including aldehydes and general mutagens

Round et al. NTR 2018

Weight gain in smokers who switch to EC

- Quitters without EC gained more weight than quitters who switched to EC
- Quitting with EC may improve cardiovascular and metabolic outcomes

Russo et al. Sci Rep 2016 Jan 5;6;18763

Also

- Possibly reduction in respiratory infections (Miler et al. 2016, 2018) – PG/VG/nicotine possibly anti-viral and anti-bacterial
- Smoking reduces gut bacteria diversity; possible link to diabetes, obesity, colorectal cancer etc. Vapers have the same as non-smokers (Stewart et al. Peer J 2018)

Mail Online

E-cigarettes are NOT harmless - chemicals in vaping trigger bladder cancer, study reveals

- No it does not! Unpublished conference presentation: 12 vapers had two putative carcinogens in their urine. They could still be smoking; levels not provided – could be negligible; no comparison with smoking levels; no cancer was detected
- 19 May 2017

Frog embryos injected with saline-vapour mixture

Vaping and pregnancy: New research warns of crippling birth defects from the chemical flavoring

Mail Online

Vaping while pregnant could cause crippling facial birth defects, new research warns

Some 2018 scares

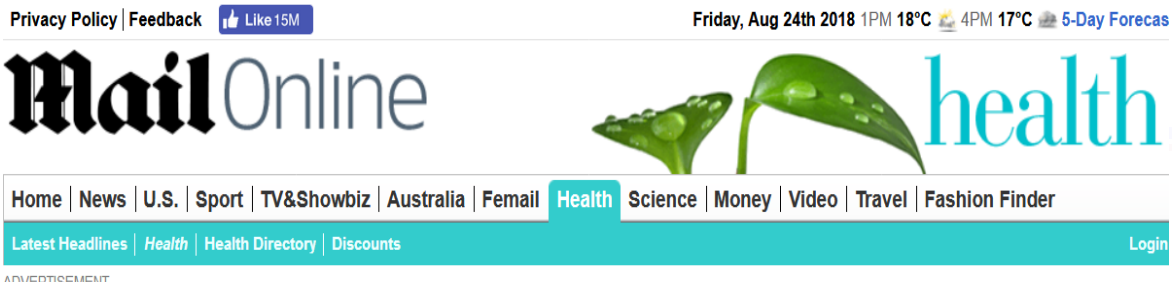
- Cells put in nicotine **AND** carcinogen (NNK) got damaged
- Authors admit vapers have 97% less NNAL than smokers, but still claim:
- ‘We propose e-cigarette smoke is carcinogenic’ !!!

Media oblige

The newest and so far the worst

- Smokers who get an MI are more likely to switch to vaping
- There is thus an association between MI and vaping
- Authors twisted this to: ‘EC use is associated with **increased risk of** myocardial infarction' and later to ‘risk of MI is higher in vapers’

Alzharani et al. AJPM 2018



Vapers who use e-cigarettes every day are almost TWICE as likely to suffer a heart attack, and they're even more at risk if they switched from smoking

Particulate pollution

- Low-income households; pollution levels monitored for a week
- Detected in homes of smokers, with fried food and even use of candles
- No pollution (increase in particle counts) in homes of vapers (Klepeis et al. PlosOne 2017)

Twitter 7/4/2017

Smokers in US and Europe are increasingly misinformed

- Rasmussen Report, US adults 2018
- *Is smoking electronic cigarettes more safe or less safe than smoking traditional cigarettes, or is the health risk about the same?*
- Safer: 20%; less safe: 13%; about the same 50%; not sure: 17%
- **70% think EC are as bad or worse than cigarettes**

What about dual users (DU)

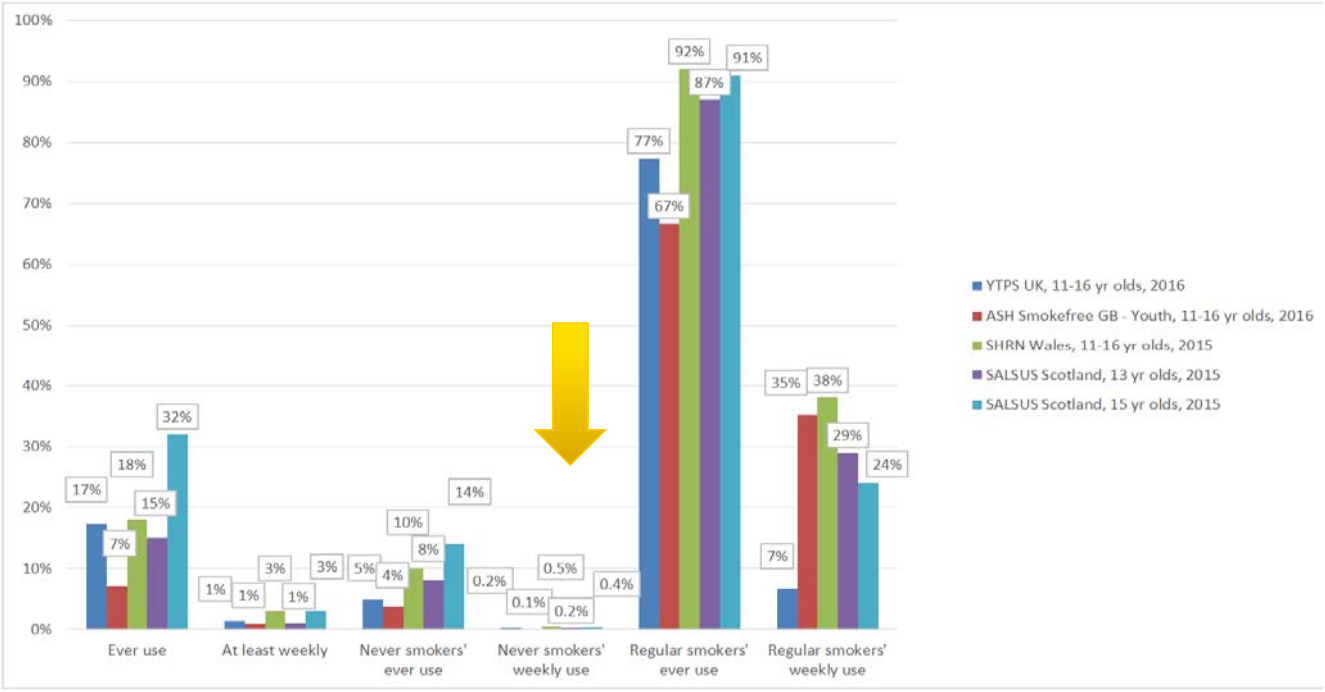
- Logic implies reduced smoke/toxin intake
- Cross-section study: DU and smokers the same (Shahab et al. Ann Int Med 2017); but DU could have smoked more before switching
- Experimental data: Dual users reduce toxin intake by 20-25% (Czoli et al. NTR 2018)
- In a DU cohort, 28% quit smoking within a year (Etter NTR 2018)

Re-normalisation/gateway concerns

Cigarette vs e-cigarette sales

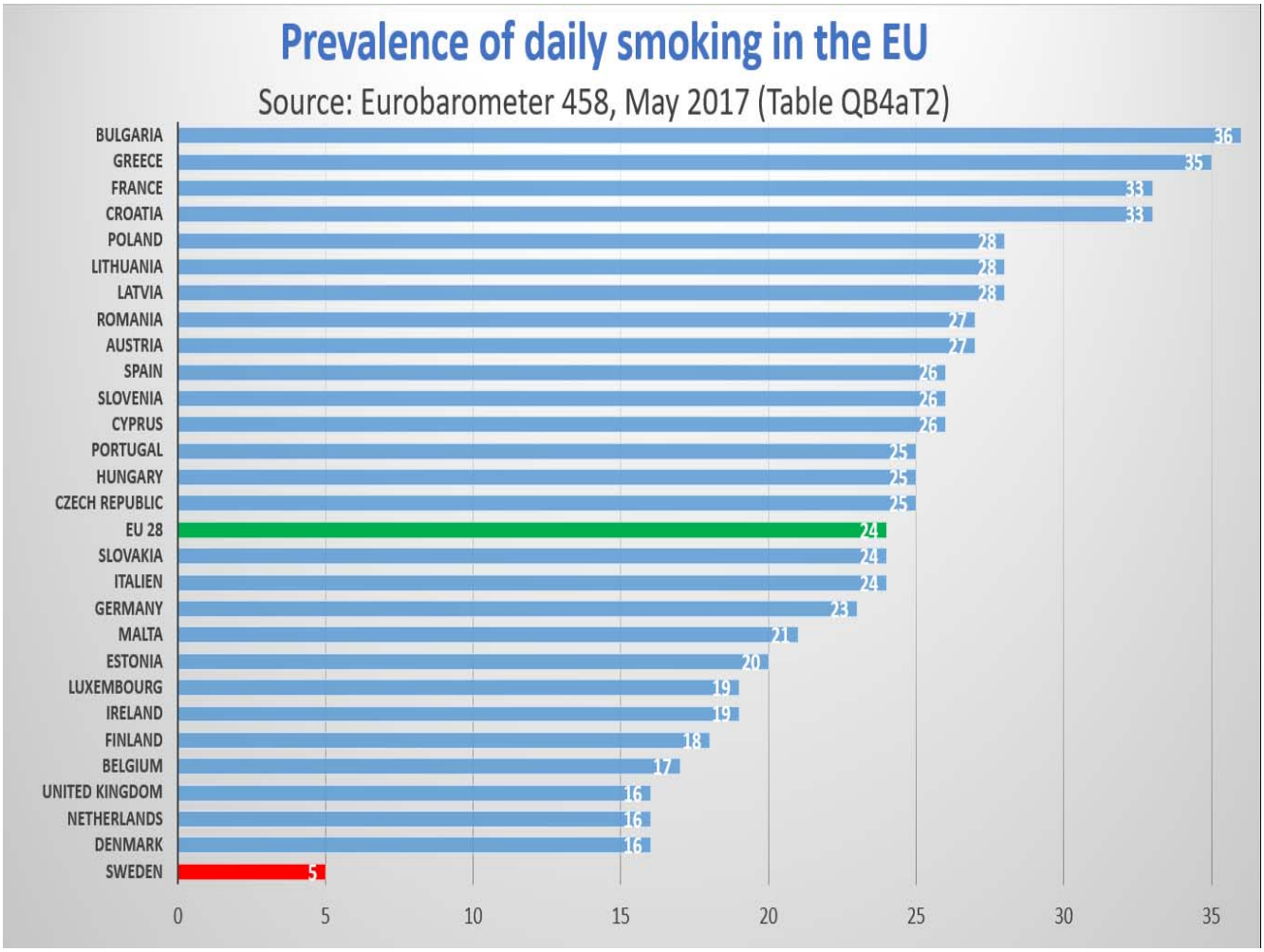
- If vaping promoted smoking, both would grow. If it displaced smoking, cig sales and smoking prevalence would decline
- Imperial Brands (Gauloises, Winston)
  - 6% decline in sales in 2016-2017
- PMI reports
  - The decline in cigarettes sales is accelerating
- The decline in smoking prevalence is accelerating, especially among the young

Surveys including over 60,000 young people: EC use among adolescents is confined to smokers



Bauld et al. (2017) Int. J. Environ. Res. Public Health, 14, 973

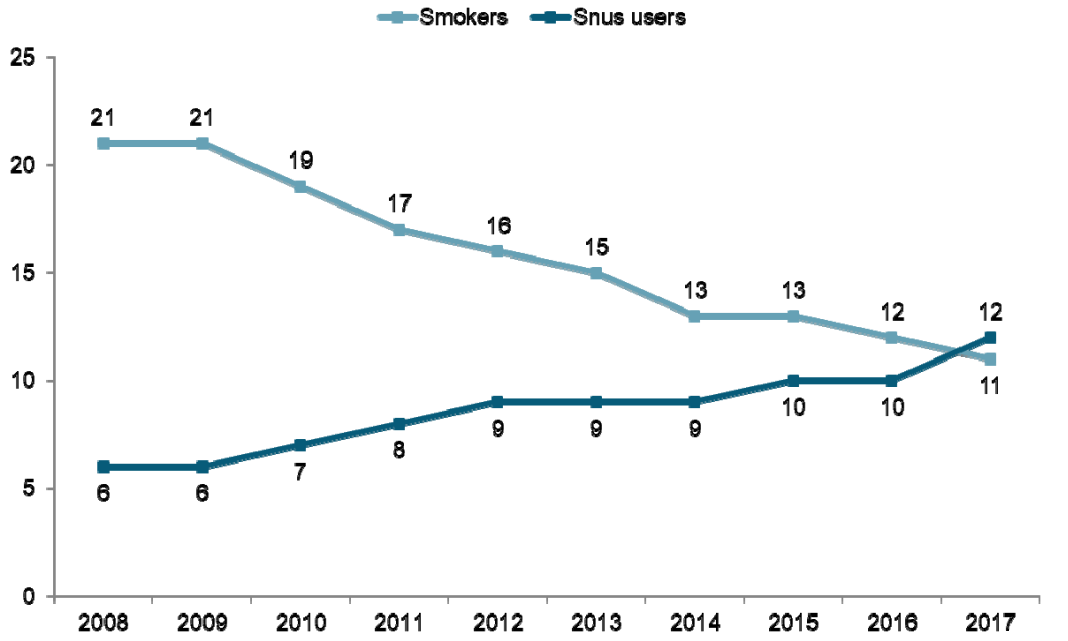
The story of snus continues



Norway (not in EU)

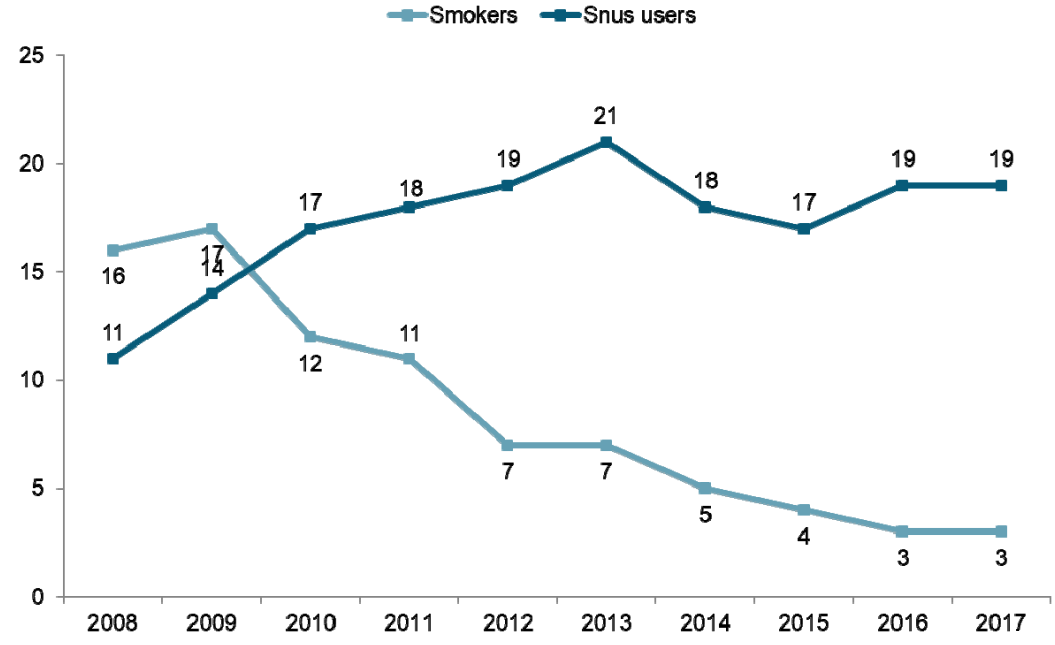
- Also allows snus
- 2007 smoking rate: 22%; **2017: 11%**
- Driven by replacing cigs by snus
- 2017 the first year in which snus incidence (12%) exceeded that of cigarettes
- Overall nicotine use constant

Prevalence (%) of smoking and snus use in Norway



Statistics Norway/The Norwegian Directorate of Health

Daily use in those under the age of 25



https://www.ssb.no/en/helse/statistikker/royk
Statistics Norway/The Norwegian Directorate of Health

Evidence and its implication

- If safer alternatives are available, and regulators allow truthful information about relative risks, smokers switch
- If WHO, other tobacco control bodies and media stopped misleading regulators and smokers, smoking would be declining much faster

New data on EC and smoking cessation

Effects of e-cigarettes (EC) in clinical context, studies 2017-2018

RCT that included EC

- 1st gen EC, meds+EC, same+incentives (2x)
- Smoking employees, did not ask for treatment
- Repeated blood sampling to be 'abstainer'
- 6-M 'quit rates' 1% in EC and 0.5% in meds+EC arms (NS) (0.1% info+texts)
- Up to $600 to attend blood sampling: 2.9%
  - 12M: 0%, 0.3%, 0.3%, 1.2% (0%-5% in 'engaged')
- Difficult to interpret

Halpern et al. NEJM 2018

Balance of evidence after the new crop of data

- No contributions to Cochrane, so the conclusions that EC with nicotine are better than placebo and EC effects are similar to effects of NRT still stand

EC and UK stop-smoking services

NCSCT Briefing on EC and working with vape shops

- ncsct.co.uk/usr/pub/Electronic_cigarettes._A_briefing_for_stop_smoking_services.pdf
- http://www.ncsct.co.uk/usr/pub/Working%20with%20vape%20shops.pdf

Starter kits in UK services

What to say to smokers asking about EC?

- Some smokers find them helpful
- You may need to try several types of EC to find one that works for you
- Using EC in combination with support and other aids is likely to make quitting smoking easier

- **Does the same apply to HnB in Japan?**

Interest in varenicline and its effects in people who both smoke and vape

Peter Hajek, Sarrah Peerbux, Anne Phillips-Waller, Charlotte Smith, Dunja Przulj

UKCTAS
UK Centre for Tobacco & Alcohol Studies

Background

- Smokers try EC (and HnB) to limit risks of smoking
- Some switch fully, some abandon vaping
- Some become dual users – find EC helpful enough to smoke less, but not good enough to replace smoking altogether
- Nothing is known about interest among dual users in stop-smoking medications and whether they can help them

DUO study

- Longitudinal study of dual users (N=204)
  - Funded by Pfizer (investigator initiated)
  - Smokers using both CC and EC (separately or concurrently) on at least 3 days a week for at least 1M; want to stop smoking altogether
- Recruited mainly via Facebook
- **Interest in and reactions to varenicline**
  - NRT is of less interest in this context

Study procedures

- Questionnaires including medical history, saliva kit and £20 posted
  - Q included: Interested in V to stop smoking?
- Those wanting V called to confirm, asked to call on receipt before starting use
- TQD and 4 weekly+ 3 fortnightly phone calls
- Follow-ups at 3 and 6 months

Are dual users interested in varenicline?

- We expected minimal interest as these smokers opted for EC rather then medications which are, in the UK, available on the NHS
- The majority however expressed interest
  - Some lost contact or changed their mind
- Just under half confirmed interest and received varenicline

Did those wanting and not wanting varenicline differ?

- **Those wanting varenicline had**
  - Higher tobacco dependence (FTND score)
  - Smoked more cigarettes per day
  - Used stronger e-liquids

83

Quitting outcomes

- All participants wished to stop smoking, but only the varenicline (v.) group received a TQD and weekly phone calls. Quit rates since study start would be heavily biased, so we present here point-prevalence (past 7 days) quit rates at 6 months

84

Quitting vaping, smoking and both

- Quitting vaping: About a quarter stopped vaping in the v. group versus almost nobody in the non-v. group
- Quitting smoking: About three times as many stopped smoking in v. group
- Quitting both: Almost a fifth stopped using both products in the v. group vs almost nobody in non-v. group
- All differences were highly significant

85

Changes in enjoyment of smoking and vaping

- Participants rated their enjoyment of smoking and vaping at baseline and again at the end of v. use period at 3M

- V. use group showed a larger reduction in enjoyment of both products, but this was significant only for vaping

86

Conclusions

- Almost half of dual users are keen to use varenicline (more dependent smokers using stronger e-liquid)
- There is a clear signal that varenicline helps them stop smoking (and vaping)
- Clinicians can advise dual users who want to stop smoking altogether that there is some evidence that varenicline can help them
- A randomised study is needed to provide definitive evidence